



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10 064,753	08/14/2002	Masato Kawai	9063-US-PA	8462

31561 7590 04 22 2003

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

SPITZER, ROBERT H

ART UNIT	PAPER NUMBER
----------	--------------

1724

DATE MAILED: 04/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,753

Applicant(s)

KAWAI ET AL.

Examiner

Robert H. Spitzer

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auvil et al. (5,240,474) in view of Gemba et al. (4,925,461). Auvil et al. ('474) teach the use of carbon molecular sieves (CMS) for the production of enriched nitrogen gas by the adsorption of the oxygen component of feed air. A parameter termed the "characteristic time" is defined to be "the time required to reach 2/3 loading when a CMS initially at zero pressure is suddenly exposed to 1 atmosphere of a pure gas". Example 60, in particular, shows where the nitrogen adsorption time to reach 2/3 (67.7%) saturation is at least 72 times that of oxygen to reach the same saturation level, which occurs after 15.5 seconds. The 50% loading would obviously occur at a time less than that 15.5 seconds and would fall within the approximately 5 to 10 seconds recited in these claims, because the adsorption of the oxygen occurs much more quickly initially than it does after the passage of some time. That is, on CMS, oxygen is initially almost exclusively adsorbed before any nitrogen will be adsorbed thereon. Thus, at the lower time values, the adsorbent (CMS) will contain exclusively oxygen. The claims differ from that disclosure of Auvil et al. ('474) in the nitrogen produced having "a purity ranging from 99% to 99.999%" and in the regeneration step of the PSA process occurring "under atmospheric pressure". Gemba et al. ('461) state that "the purity of nitrogen gas obtainable in practical processes using the PSA system is generally said to be at most 99.0% in the case of atmospheric regeneration". Gemba et al. ('461) go on to show four

Art Unit: 1724

embodiments of their invention wherein both a vacuum pressure is used during regeneration and where the adsorber is merely vented to atmosphere, wherein the aim is to achieve 99.99% pure nitrogen gas. See col. 10, line 61 through col. 11, line 17, for the fourth embodiment. Also Example 8 of Gemba et al. ('461), shows that with depressurization down to atmospheric pressure, a nitrogen product gas can be obtained which contains "a residual oxygen concentration of 730 ppm", which is approximately 99.9993% pure nitrogen gas. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, that a PSA process which depressurizes only to atmospheric pressure will produce a nitrogen product gas having 99% to 99.999% pure nitrogen gas in the PSA process of Auvil et al. ('474) in view of the showing of Gemba et al. ('461). For claims 2 and 3, Gemba et al. ('461) also show that a PSA process utilizing a CMS adsorbent will result in the formation of a product nitrogen gas of at least 99.99% purity, which is 1000 ppm oxygen (Example 8).

3. Applicant's arguments filed April 3, 2003 have been fully considered but they are not persuasive. In those remarks, Applicants' argue that the references to Auvil et al. ('474) and Gemba et al. ('461), do not show that CMS adsorbent will provide a nitrogen product gas of at least 99% purity, using a PSA process which depressurizes only to atmospheric pressure and has the TO and TN parameters specified in these claims. As pointed out in the above paragraph, the process of Auvil et al. ('474), which utilizes a PSA process and CMS adsorbent to obtain a product gas containing almost pure nitrogen, shows the TO and TN parameters, as is clearly explained in the paragraph directly above. With respect to the level of purity of the nitrogen product gas obtained

Art Unit: 1724

being at least 99% and the depressurization pressure of the PSA process being to atmospheric pressure, the Examiner agrees that the Auvil et al. ('474) reference does not show those two features. However, also as pointed out in the paragraph directly above, the Gemba et al. ('461) reference does provide both a showing of the level of purity and the atmospheric depressurization pressure recited in these claims. One skilled in the art, having both the Auvil et al. ('474) and the Gemba et al. ('461) references before him, would have found it obvious that the PSA process of Auvil et al. ('474), when operated to a depressurization pressure of atmospheric pressure, with the particular equalization conditions met, would produce a nitrogen product gas being at least 99.99% pure. The CMS of Auvil et al. ('474) does not appear to be any different from that being described in Applicants' specification or that of Gemba et al. ('461) and encompassed by the instant claims. Any other remarks made by Applicants and not specifically commented on by the Examiner, have been considered.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1724

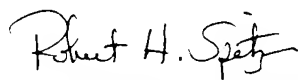
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert H. Spitzer whose telephone number is (703) 308-3794. The examiner can normally be reached on Monday-Thursday from 5:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Simmons, can be reached on (703) 308-1972. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 and for After Final communications the fax number is (703) 872-9311.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Robert H. Spitzer
April 21, 2003


Robert H. Spitzer
Primary Examiner
Art Unit 1724
April 21, 2003